



# **Office of Nuclear Reactor Regulation RTR Oversight Branch**

## **50.59 Overview**

TRTR Briefing

September 2013



# Outline

- Introduction
- 50.59 History
- Screening – What Needs a 50.59 Evaluation
- Evaluation – 8 Questions
- Reporting and Record Keeping
- Questions and Answers



## Key Guidance in 50.59

- Screening: Determine if a 10 CFR 50.59 evaluation is required.
- Evaluation: Apply the eight evaluation criteria of 10 CFR 50.59(c)(2) to determine if a license amendment must be obtained from the NRC.
- Documentation and reporting: Document and report to the NRC activities implemented under 10 CFR 50.59.



# History

- The 50.59 rule was promulgated in 1962 and revised in 1968.
- In 1999, the NRC revised its regulation controlling changes, tests and experiments performed by nuclear plant licensees - the first changes to 10 CFR 50.59 in more than 30 years.
- The changes were prompted by the need to resolve differences in interpretation of the rule's requirements by the industry and the NRC that came in clear focus in 1996.



## History (cont'd)

- The rule changes had two principal objectives, both aimed at restoring much-needed regulatory stability to this extensively used regulation:
  - Establish clear definitions to promote common understanding of the rule's requirements
  - Clarify the criteria for determining when changes, tests and experiments require prior NRC approval



## History (cont'd)

- Providing greater flexibility to licensees, primarily by allowing changes that have minimal safety impact to be made without prior NRC approval
- Clarifying the threshold for "screening out" changes that do not require full evaluation under 10 CFR 50.59, primarily by adoption of key definitions.
- The Commission action marks achievement of our shared goal to provide licensees with consensus guidelines for implementing 10 CFR 50.59 and thus restore regulatory stability in this important area.



# Primary Reference Documents

- NRC Regulatory Guide 1.187, “Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments” endorses Revision 1 of NEI 96-07
- Rev. 1 of NEI 96-07, “Guidelines for 10 CFR 50.59 Evaluations,” dated November 2000, provides methods that are acceptable to the NRC staff for complying with the provisions of 10 CFR 50.59



# Applicability to Non-Power Reactors

- As stated in Regulatory Guide 1.187, NEI 96-07 is applicable to non-power reactors
- “While most of the examples and specific discussion focus on power reactors, the guidance contained in Revision 1 of **NEI 96-07 is also applicable to evaluations performed by licensees for non-power reactors.**”
- Certain of the provisions in the guidance that discuss the relationship of other regulatory requirements to 10 CFR 50.59 may not be fully applicable to non-power reactors because of differences in those other requirements.





# Screening

- A licensee may make changes in the facility as described in the final safety analysis report (as updated), make changes in the procedures as described in the final safety analysis report (as updated), and conduct tests or experiments not described in the final safety analysis report (as updated) without obtaining a license amendment pursuant to Sec. 50.90 only if:
  - (i) A change to the technical specifications incorporated in the license is not required, and
  - (ii) The change, test, or experiment does not meet any of the criteria in paragraph (c)(2) of this section.



# Screening Questions

- Is it a change to the facility as described in the final safety analysis report?
- Is it a change to the procedures as described in the final safety analysis report?
- Is it the conduct of tests or experiments not described in the final safety analysis report?
- In order to understand these 3 screening questions we need to look at the definitions of some key terms



## Definition - Change

- Change means a **modification** or **addition to**, or **removal from**, the facility or procedures that affects:
  - A design function,
  - A method of performing or controlling the function, or
  - An evaluation that demonstrates that intended functions will be accomplished.



## Definition - Facility

- Facility as described in the final safety analysis report (as updated) means:
  - The structures, systems, and components (SSC) that are described in the final safety analysis report (FSAR) (as updated)
  - The design and performance requirements for such SSCs described in the FSAR (as updated), and
  - The evaluations or methods of evaluation included in the FSAR (as updated) for such SSCs which demonstrate that their intended function(s) will be accomplished.



## Exclusion for Maintenance

- Maintenance activities are activities that restore SSCs to their as-designed condition, including activities that implement approved design changes. Maintenance activities are not subject to 10 CFR 50.59.
- Maintenance activities include troubleshooting, calibration, refurbishment, maintenance-related testing, identical replacements, housekeeping and similar activities that do not permanently alter the design, performance requirements, operation or control of SSCs.



## Definition - Procedures

- Procedures as described in the final safety analysis report (as updated) means those procedures that contain information described in the FSAR (as updated) such as how structures, systems, and components are operated and controlled (including assumed operator actions and response times).



## Definition – Procedures (cont'd)

- As stated in NEI 96-07: For purposes of 10 CFR 50.59, "procedures" are not limited to plant procedures specifically identified in the UFSAR (e.g., operating and emergency procedures). Procedures include UFSAR descriptions of how actions related to system operation are to be performed and controls over the performance of design functions.



## Definition – Procedures (cont'd)

- This includes UFSAR descriptions of operator action sequencing or response times, certain descriptions (text or figure) of SSC operation and operating modes, operational and radiological controls, and similar information.
- If changes to these activities or controls are made, such changes are considered changes to procedures described in the UFSAR, and the changes are subject to 10 CFR 50.59.





## Definition - Test or Experiments

- Tests or experiments not described in the final safety analysis report (as updated) means any activity where any structure, system, or component is utilized or controlled in a manner which is either:
  - (i) Outside the reference bounds of the design bases as described in the final safety analysis report (as updated) or
  - (ii) Inconsistent with the analyses or descriptions in the final safety analysis report (as updated).



## Definition – Tests or Experiments

- As stated in NEI 96-07: 10 CFR 50.59 is applied to tests or experiments not described in the UFSAR. The intent of the definition is to ensure that tests or experiments that put the facility in a situation that has not previously been evaluated (e.g., unanalyzed system alignments) or that could affect the capability of SSCs to perform their intended design functions (e.g., high flow rates, high temperatures) are evaluated before they are conducted to determine if prior NRC approval is required.



# Exclusions for Security and Emergency Planning

- As discussed in 10CFR50.59, changes to programs such as security and emergency planning are excluded from the requirements of 50.59
- 50.59 states: “The provisions in this section do not apply to changes to the facility or procedures when the applicable regulations establish more specific criteria for accomplishing such changes.”



# Screening Outcome

- If the answer to any of the 3 screening questions is yes, then an “*Evaluation*” must be completed and documented per 10CFR50.59



# Evaluation

- A licensee shall obtain a license amendment pursuant to Sec. 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would:
- (50.59 then includes 8 questions. If the answer to any of these 8 questions is yes, then prior NRC approval is required prior to implementation)



# Evaluation Questions

- Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the final safety analysis report (as updated);
- Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the final safety analysis report (as updated);



## Term “more than minimal”

- As discussed in NEI 96-07: In determining when something is “more than minimal” licensees may use reasonable engineering practices and engineering judgment.



## Evaluation Questions (cont'd)

- Result in more than a minimal increase in the consequences of an accident previously evaluated in the final safety analysis report (as updated)
- Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the final safety analysis report (as updated);





## Evaluation Questions (cont'd)

- Create a possibility for an accident of a different type than any previously evaluated in the final safety analysis report (as updated);
- Create a possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the final safety analysis report (as updated);



## Evaluation Questions (cont'd)

- Result in a design basis limit for a fission product barrier as described in the FSAR (as updated) being exceeded or altered; or
- Result in a departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses.



# Record Keeping

- The licensee shall maintain records of changes in the facility, of changes in procedures, and of tests and experiments made pursuant to paragraph (c) of this section.
- These records must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to paragraph (c)(2) of this section.



# Reporting Requirements

- The licensee shall submit, as specified in § 50.4, a report containing a brief description of any changes, tests, and experiments, including a summary of the evaluation of each.
- A report must be submitted at intervals not to exceed 24 months (or as defined in the Operating License or Tech Specs if they are more restrictive)
- Usually included in the facility's annual report.



# Records Retention

- The records of changes in the facility must be maintained until the termination of an operating license
- Records of changes in procedures and records of tests and experiments must be maintained for a period of 5 years.



# Summary

- The purpose of recent revisions to 50.59 was to:
  - Provide greater flexibility to licensees, primarily by allowing changes that have minimal safety impact to be made without prior NRC approval
  - Clarify the threshold for "screening out" changes that do not require full evaluation under 10 CFR 50.59, primarily by adoption of key definitions.
- The purpose of today's presentation was to support the same NRC goal as that stated in the original NRC letter endorsing Rev. 1 to NEI 96-07.
  - "The Commission action marks achievement of our **shared** goal to provide licensees with consensus guidelines for implementing 10 CFR 50.59 and thus restore regulatory stability in this important area."